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% Female Mouse Kidney In Vitro MCMC simulation file
% Three chains can be run by selecting different seernd
% and changing the output file name

prepare @clear
prepare @all
%% feamle
VVIAL=.01163;
VMED=.001;
VINJ=0.0002;
VAIR=VVIAL-VMED;
TSTOP=1.2; TF=0.; TI=0.2;
PROT = 2.0;
P1=0.69;
KG = 0.1 ; %0.0636 ;          % 1.00e-01 ;
RLOSS = 0.001424 ;
CINT = 0.1 ;
MAXT = 0.001;

WESITG=0;
WEDITG =0;

VMAX1=0;
KM1=1;
PROT=1.0 ;

WESITG=0;
WEDITG =0;

CINT = 0.1 ;
MAXT = 0.01 ;
TSTOP = 1.0 ;

KG1 = 0.45 ;

seedrnd(45526)
%seedrnd(334485)
%seedrnd(998754)

global _cal
global _time
global data
global tFindex
global tMindex

global CCC
global firstT
global lastT
global firstD
global lastD
global ControlData

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use ('ControlData.m')
use ('Kidney2009.m')

global Gender
Gender = 1 ;

dataF = [FMiceKid(:, ID_540ppm : ID_2ppm)];
dataM = [MMiceKid(:, ID_540ppm : ID_2ppm)];
data = dataF ;
firstT = [1, 1]
lastT = [6, 6]
firstD = [1, 7]
lastD = [6, 12]
tFindex = FMiceKid(:, ID_time);
tMindex = MMiceKid(:, ID_time);

AA=dataF(1,:)*(VAIR+P1*VMED);
BB=dataM(1,:)*(VAIR+P1*VMED);
CCC = [AA, BB];
data = log(data);

function preds = getpreds(Vmax, Km, VK, A10, Gender)
    global _cal
    global _time
    global tFindex
    global tMindex
    global ControlData

    % draw back ground loss rate
    tmp = ceil(rand*500);
    lossR = ControlData(tmp);

    setmdl("VMAX1", exp(Vmax)); % reset model parameter as global
variables
    setmdl("KM1", exp(Km));
    setmdl("VK", VK);
    setmdl("A10", A10);
    setmdl("RLOSS", exp(lossR));

    if Gender==1
        tindex = tFindex;
        setmdl("VVIAL", 0.01163);
        setmdl("VINJ", 0.0002);
    else
        tindex = tMindex;
        setmdl("VVIAL", 0.0119573);
        setmdl("VINJ", 0.0003858);
    end

    data @clear
    data("SAMPTIMES", ["T"], tindex);

    start @nocallback

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preds = NaN*ones(length(tindex), 1);

for i = 1:length(tindex)
    idx = find(_time == tindex(i));
    if(idx ~= [])
        preds(i) = max(0.0, _cal(idx));
    end
end

preds = log(preds);

use fminvitrolivl1.m

chains = runmcmc();

save @file=fmousekidneyredol.dat @format=ascii @separator=tab chains
```